

SEQUENCE LISTING

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<120> Modulating Robo: Ligand Interactions

<130> B98-031-3

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<150> 60/065,544

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<160> 20

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<210> 1

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<212> DNA

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<221> CDS

<222> (1)..(4575)

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gta cat ggc acc tgc ttg ccc atc aat gcg ttc tcc tac agc tgt aag Val His Gly Thr Cys Leu Pro Ile Asn Ala Phe Ser Tyr Ser Cys Lys 1380 1385 1390	4176
tgc ttg gag ggc cat gga ggt gtc ctc tgt gat gaa gag gag gat ctg Cys Leu Glu Gly His Gly Gly Val Leu Cys Asp Glu Glu Glu Asp Leu 1395 1400 1405	4224
ttt aac cca tgc cag gcg atc aag tgc aag cat ggg aag tgc agg ctt Phe Asn Pro Cys Gln Ala Ile Lys Cys Lys His Gly Lys Cys Arg Leu 1410 1415 1420	4272
tca ggt ctg ggg cag ccc tac tgt gaa tgc agc agt gga tac acg ggg Ser Gly Leu Gly Gln Pro Tyr Cys Glu Cys Ser Ser Gly Tyr Thr Gly 1425 1430 1435 1440	4320
gac agc tgt gat cga gaa atc tct tgt cga ggg gaa agg ata aga gat	4368

Asp Ser Cys Asp Arg Glu Ile Ser Cys Arg Gly Glu Arg Ile Arg Asp
 1445 1450 1455
 tat tac caa aag cag cag ggc tat gct gct tgc caa aca acc aag aag 4416
 Tyr Tyr Gln Lys Gln Gln Gly Tyr Ala Ala Cys Gln Thr Thr Lys Lys
 1460 1465 1470
 gtg tcc cga tta gag tgc aga ggt ggg tgt gca gga ggg cag tgc tgt 4464
 Val Ser Arg Leu Glu Cys Arg Gly Gly Cys Ala Gly Gly Gln Cys Cys
 1475 1480 1485
 gga ccg ctg agg agc aag cgg cgg aaa tac tct ttc gaa tgc act gac 4512
 Gly Pro Leu Arg Ser Lys Arg Arg Lys Tyr Ser Phe Glu Cys Thr Asp
 1490 1495 1500
 ggc tcc tcc ttt gtg gac gag gtt gag aaa gtg gtg aag tgc ggc tgt 4560
 Gly Ser Ser Phe Val Asp Glu Val Glu Lys Val Val Lys Cys Gly Cys
 1505 1510 1515 1520
 acg agg tgt gtg tcc taaacacact cccggcagct ctgtcttttg aaaaggttgt 4615
 Thr Arg Cys Val Ser
 1525
 atacttcttg accatgtggg actaatgaat gcttcatagt ggaaatattt gaaatatatt 4675
 gtaaaataca gaacagactt atttttatta tgagaataaa gacttttttt ctgcatttg 4735
 aaaaaaaaaa aaaaaaaact cga 4758

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 <213> human

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 20 25 30
 Ser Cys Ser Gly Ser Thr Val Asp Cys His Gly Leu Ala Leu Arg Ser
 35 40 45
 Val Pro Arg Asn Ile Pro Arg Asn Thr Glu Arg Leu Asp Leu Asn Gly
 50 55 60
 Asn Asn Ile Thr Arg Ile Thr Lys Thr Asp Phe Ala Gly Leu Arg His
 65 70 75 80
 Leu Arg Val Leu Gln Leu Met Glu Asn Lys Ile Ser Thr Ile Glu Arg
 85 90 95
 Gly Ala Phe Gln Asp Leu Lys Glu Leu Glu Arg Leu Arg Leu Asn Arg
 100 105 110
 Asn His Leu Gln Leu Phe Pro Glu Leu Leu Phe Leu Gly Thr Ala Lys
 115 120 125
 Leu Tyr Arg Leu Asp Leu Ser Glu Asn Gln Ile Gln Ala Ile Pro Arg
 130 135 140
 Lys Ala Phe Arg Gly Ala Val Asp Ile Lys Asn Leu Gln Leu Asp Tyr
 145 150 155 160

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Asn	Gln	Ile	Ser	Cys	Ile	Glu	Asp	Gly	Ala	Phe	Arg	Ala	Leu	Arg	Asp	
				165					170					175		
Leu	Glu	Val	Leu	Thr	Leu	Asn	Asn	Asn	Asn	Ile	Thr	Arg	Leu	Ser	Val	
			180					185					190			
Ala	Ser	Phe	Asn	His	Met	Pro	Lys	Leu	Arg	Thr	Phe	Arg	Leu	His	Ser	
		195					200					205				
Asn	Asn	Leu	Tyr	Cys	Asp	Cys	His	Leu	Ala	Trp	Leu	Ser	Asp	Trp	Leu	
	210					215					220					
Arg	Lys	Arg	Pro	Arg	Val	Gly	Leu	Tyr	Thr	Gln	Cys	Met	Gly	Pro	Ser	
225					230					235					240	
His	Leu	Arg	Gly	His	Asn	Val	Ala	Glu	Val	Gln	Lys	Arg	Glu	Phe	Val	
				245					250					255		
Cys	Ser	Asp	Glu	Glu	Glu	Gly	His	Gln	Ser	Phe	Met	Ala	Pro	Ser	Cys	
			260					265					270			
Ser	Val	Leu	His	Cys	Pro	Ala	Ala	Cys	Thr	Cys	Ser	Asn	Asn	Ile	Val	
		275					280					285				
Asp	Cys	Arg	Gly	Lys	Gly	Leu	Thr	Glu	Ile	Pro	Thr	Asn	Leu	Pro	Glu	
	290					295					300					
Thr	Ile	Thr	Glu	Ile	Arg	Leu	Glu	Gln	Asn	Thr	Ile	Lys	Val	Ile	Pro	
305					310					315					320	
Pro	Gly	Ala	Phe	Ser	Pro	Tyr	Lys	Lys	Leu	Arg	Arg	Ile	Asp	Leu	Ser	
				325					330					335		
Asn	Asn	Gln	Ile	Ser	Glu	Leu	Ala	Pro	Asp	Ala	Phe	Gln	Gly	Leu	Arg	
			340					345					350			
Ser	Leu	Asn	Ser	Leu	Val	Leu	Tyr	Gly	Asn	Lys	Ile	Thr	Glu	Leu	Pro	
		355					360					365				
Lys	Ser	Leu	Phe	Glu	Gly	Leu	Phe	Ser	Leu	Gln	Leu	Leu	Leu	Leu	Asn	
	370					375					380					
Ala	Asn	Lys	Ile	Asn	Cys	Leu	Arg	Val	Asp	Ala	Phe	Gln	Asp	Leu	His	
385					390					395					400	
Asn	Leu	Asn	Leu	Leu	Ser	Leu	Tyr	Asp	Asn	Lys	Leu	Gln	Thr	Ile	Ala	
				405				410						415		
Lys	Gly	Thr	Phe	Ser	Pro	Leu	Arg	Ala	Ile	Gln	Thr	Met	His	Leu	Ala	
			420					425					430			
Gln	Asn	Pro	Phe	Ile	Cys	Asp	Cys	His	Leu	Lys	Trp	Leu	Ala	Asp	Tyr	
		435					440					445				
Leu	His	Thr	Asn	Pro	Ile	Glu	Thr	Ser	Gly	Ala	Arg	Cys	Thr	Ser	Pro	
	450					455					460					
Arg	Arg	Leu	Ala	Asn	Lys	Arg	Ile	Gly	Gln	Ile	Lys	Ser	Lys	Lys	Phe	
465					470					475					480	
Arg	Cys	Ser	Gly	Thr	Glu	Asp	Tyr	Arg	Ser	Lys	Leu	Ser	Gly	Asp	Cys	
				485					490					495		
Phe	Ala	Asp	Leu	Ala	Cys	Pro	Glu	Lys	Cys	Arg	Cys	Glu	Gly	Thr	Thr	
			500					505					510			

Val	Asp	Cys	Ser	Asn	Gln	Lys	Leu	Asn	Lys	Ile	Pro	Glu	His	Ile	Pro
		515					520					525			
Gln	Tyr	Thr	Ala	Glu	Leu	Arg	Leu	Asn	Asn	Asn	Glu	Phe	Thr	Val	Leu
	530					535					540				
Glu	Ala	Thr	Gly	Ile	Phe	Lys	Lys	Leu	Pro	Gln	Leu	Arg	Lys	Ile	Asn
545					550					555					560
Phe	Ser	Asn	Asn	Lys	Ile	Thr	Asp	Ile	Glu	Glu	Gly	Ala	Phe	Glu	Gly
				565					570					575	
Ala	Ser	Gly	Val	Asn	Glu	Ile	Leu	Leu	Thr	Ser	Asn	Arg	Leu	Glu	Asn
				580					585					590	
Val	Gln	His	Lys	Met	Phe	Lys	Gly	Leu	Glu	Ser	Leu	Lys	Thr	Leu	Met
		595					600					605			
Leu	Arg	Ser	Asn	Arg	Ile	Thr	Cys	Val	Gly	Asn	Asp	Ser	Phe	Ile	Gly
	610					615					620				
Leu	Ser	Ser	Val	Arg	Leu	Leu	Ser	Leu	Tyr	Asp	Asn	Gln	Ile	Thr	Thr
625					630					635					640
Val	Ala	Pro	Gly	Ala	Phe	Asp	Thr	Leu	His	Ser	Leu	Ser	Thr	Leu	Asn
				645					650						655
Leu	Leu	Ala	Asn	Pro	Phe	Asn	Cys	Asn	Cys	Tyr	Leu	Ala	Trp	Leu	Gly
			660					665					670		
Glu	Trp	Leu	Arg	Lys	Lys	Arg	Ile	Val	Thr	Gly	Asn	Pro	Arg	Cys	Gln
		675					680					685			
Lys	Pro	Tyr	Phe	Leu	Lys	Glu	Ile	Pro	Ile	Gln	Asp	Val	Ala	Ile	Gln
	690					695					700				
Asp	Phe	Thr	Cys	Asp	Asp	Gly	Asn	Asp	Asp	Asn	Ser	Cys	Ser	Pro	Leu
705					710					715					720
Ser	Arg	Cys	Pro	Thr	Glu	Cys	Thr	Cys	Leu	Asp	Thr	Val	Val	Arg	Cys
				725					730					735	
Ser	Asn	Lys	Gly	Leu	Lys	Val	Leu	Pro	Lys	Gly	Ile	Pro	Arg	Asp	Val
			740					745					750		
Thr	Glu	Leu	Tyr	Leu	Asp	Gly	Asn	Gln	Phe	Thr	Leu	Val	Pro	Lys	Glu
		755					760					765			
Leu	Ser	Asn	Tyr	Lys	His	Leu	Thr	Leu	Ile	Asp	Leu	Ser	Asn	Asn	Arg
	770					775					780				
Ile	Ser	Thr	Leu	Ser	Asn	Gln	Ser	Phe	Ser	Asn	Met	Thr	Gln	Leu	Leu
785					790					795					800
Thr	Leu	Ile	Leu	Ser	Tyr	Asn	Arg	Leu	Arg	Cys	Ile	Pro	Pro	Arg	Thr
				805					810					815	
Phe	Asp	Gly	Leu	Lys	Ser	Leu	Arg	Leu	Leu	Ser	Leu	His	Gly	Asn	Asp
			820					825					830		
Ile	Ser	Val	Val	Pro	Glu	Gly	Ala	Phe	Asn	Asp	Leu	Ser	Ala	Leu	Ser
		835					840					845			
His	Leu	Ala	Ile	Gly	Ala	Asn	Pro	Leu	Tyr	Cys	Asp	Cys	Asn	Met	Gln
	850					855					860				

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Trp	Leu	Ser	Asp	Trp	Val	Lys	Ser	Glu	Tyr	Lys	Glu	Pro	Gly	Ile	Ala	
865					870					875					880	
Arg	Cys	Ala	Gly	Pro	Gly	Glu	Met	Ala	Asp	Lys	Leu	Leu	Leu	Thr	Thr	
				885					890					895		
Pro	Ser	Lys	Lys	Phe	Thr	Cys	Gln	Gly	Pro	Val	Asp	Val	Asn	Ile	Leu	
				900				905					910			
Ala	Lys	Cys	Asn	Pro	Cys	Leu	Ser	Asn	Pro	Cys	Lys	Asn	Asp	Gly	Thr	
		915					920					925				
Cys	Asn	Ser	Asp	Pro	Val	Asp	Phe	Tyr	Arg	Cys	Thr	Cys	Pro	Tyr	Gly	
	930					935					940					
Phe	Lys	Gly	Gln	Asp	Cys	Asp	Val	Pro	Ile	His	Ala	Cys	Ile	Ser	Asn	
945					950					955					960	
Pro	Cys	Lys	His	Gly	Gly	Thr	Cys	His	Leu	Lys	Glu	Gly	Glu	Glu	Asp	
				965					970					975		
Gly	Phe	Trp	Cys	Ile	Cys	Ala	Asp	Gly	Phe	Glu	Gly	Glu	Asn	Cys	Glu	
			980					985					990			
Val	Asn	Val	Asp	Asp	Cys	Glu	Asp	Asn	Asp	Cys	Glu	Asn	Asn	Ser	Thr	
		995					1000					1005				
Cys	Val	Asp	Gly	Ile	Asn	Asn	Tyr	Thr	Cys	Leu	Cys	Pro	Pro	Glu	Tyr	
	1010					1015					1020					
Thr	Gly	Glu	Leu	Cys	Glu	Glu	Lys	Leu	Asp	Phe	Cys	Ala	Gln	Asp	Leu	
1025					1030					1035					1040	
Asn	Pro	Cys	Gln	His	Asp	Ser	Lys	Cys	Ile	Leu	Thr	Pro	Lys	Gly	Phe	
				1045					1050					1055		
Lys	Cys	Asp	Cys	Thr	Pro	Gly	Tyr	Val	Gly	Glu	His	Cys	Asp	Ile	Asp	
		1060					1065						1070			
Phe	Asp	Asp	Cys	Gln	Asp	Asn	Lys	Cys	Lys	Asn	Gly	Ala	His	Cys	Thr	
	1075						1080					1085				
Asp	Ala	Val	Asn	Gly	Tyr	Thr	Cys	Ile	Cys	Pro	Glu	Gly	Tyr	Ser	Gly	
	1090					1095					1100					
Leu	Phe	Cys	Glu	Phe	Ser	Pro	Pro	Met	Val	Leu	Pro	Arg	Thr	Ser	Pro	
1105					1110					1115					1120	
Cys	Asp	Asn	Phe	Asp	Cys	Gln	Asn	Gly	Ala	Gln	Cys	Ile	Val	Arg	Ile	
			1125						1130					1135		
Asn	Glu	Pro	Ile	Cys	Gln	Cys	Leu	Pro	Gly	Tyr	Gln	Gly	Glu	Lys	Cys	
		1140						1145					1150			
Glu	Lys	Leu	Val	Ser	Val	Asn	Phe	Ile	Asn	Lys	Glu	Ser	Tyr	Leu	Gln	
	1155						1160					1165				
Ile	Pro	Ser	Ala	Lys	Val	Arg	Pro	Gln	Thr	Asn	Ile	Thr	Leu	Gln	Ile	
	1170					1175					1180					
Ala	Thr	Asp	Glu	Asp	Ser	Gly	Ile	Leu	Leu	Tyr	Lys	Gly	Asp	Lys	Asp	
1185					1190					1195					1200	
His	Ile	Ala	Val	Glu	Leu	Tyr	Arg	Gly	Arg	Val	Arg	Ala	Ser	Tyr	Asp	
			1205					1210						1215		

Thr Gly Ser His Pro Ala Ser Ala Ile Tyr Ser Val Glu Thr Ile Asn
 1220 1225 1230
 Asp Gly Asn Phe His Ile Val Glu Leu Leu Ala Leu Asp Gln Ser Leu
 1235 1240 1245
 Ser Leu Ser Val Asp Gly Gly Asn Pro Lys Ile Ile Thr Asn Leu Ser
 1250 1255 1260
 Lys Gln Ser Thr Leu Asn Phe Asp Ser Pro Leu Tyr Val Gly Gly Met
 1265 1270 1275 1280
 Pro Gly Lys Ser Asn Val Ala Ser Leu Arg Gln Ala Pro Gly Gln Asn
 1285 1290 1295
 Gly Thr Ser Phe His Gly Cys Ile Arg Asn Leu Tyr Ile Asn Ser Glu
 1300 1305 1310
 Leu Gln Asp Phe Gln Lys Val Pro Met Gln Thr Gly Ile Leu Pro Gly
 1315 1320 1325
 Cys Glu Pro Cys His Lys Lys Val Cys Ala His Gly Thr Cys Gln Pro
 1330 1335 1340
 Ser Ser Gln Ala Gly Phe Thr Cys Glu Cys Gln Glu Gly Trp Met Gly
 1345 1350 1355 1360
 Pro Leu Cys Asp Gln Arg Thr Asn Asp Pro Cys Leu Gly Asn Lys Cys
 1365 1370 1375
 Val His Gly Thr Cys Leu Pro Ile Asn Ala Phe Ser Tyr Ser Cys Lys
 1380 1385 1390
 Cys Leu Glu Gly His Gly Gly Val Leu Cys Asp Glu Glu Glu Asp Leu
 1395 1400 1405
 Phe Asn Pro Cys Gln Ala Ile Lys Cys Lys His Gly Lys Cys Arg Leu
 1410 1415 1420
 Ser Gly Leu Gly Gln Pro Tyr Cys Glu Cys Ser Ser Gly Tyr Thr Gly
 1425 1430 1435 1440
 Asp Ser Cys Asp Arg Glu Ile Ser Cys Arg Gly Glu Arg Ile Arg Asp
 1445 1450 1455
 Tyr Tyr Gln Lys Gln Gln Gly Tyr Ala Ala Cys Gln Thr Thr Lys Lys
 1460 1465 1470
 Val Ser Arg Leu Glu Cys Arg Gly Gly Cys Ala Gly Gly Gln Cys Cys
 1475 1480 1485
 Gly Pro Leu Arg Ser Lys Arg Arg Lys Tyr Ser Phe Glu Cys Thr Asp
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 Gly Ser Ser Phe Val Asp Glu Val Glu Lys Val Val Lys Cys Gly Cys
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 Thr Arg Cys Val Ser
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 35 40 45
 Tyr Lys Lys Leu Lys Arg Ile Asp Ile Ser Lys Asn Gln Ile Ser Asp
 50 55 60
 Ile Ala Pro Asp Ala Phe Gln Gly Leu Lys Ser Leu Thr Ser Leu Val
 65 70 75 80
 Leu Tyr Gly Asn Lys Ile Thr Glu Ile Ala Lys Gly Leu Phe Asp Gly
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 Leu Val Ser Leu Gln Leu Leu Leu Leu
 100 105

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 Ser Gly Leu Lys Thr Leu Met Leu Arg Ser Asn Leu Ile Gly Cys Val
 35 40 45
 Ser Asn Asp Thr Phe Ala Gly Leu Ser Ser Val Arg Leu Leu Ser Leu
 50 55 60
 Tyr Asp Asn Arg Ile Thr Thr Ile Thr Pro Gly Ala Phe Thr Thr Leu
 65 70 75 80
 Val Ser Leu Ser Thr Ile Asn Leu Leu Ser Asn Pro Phe Asn Cys Asn
 85 90 95
 Cys His Leu Gly Ala Gly Leu Gly Lys Trp Leu Arg Lys Arg Arg Ile
 100 105 110
 Val Ser Gly Asn Pro Arg Cys Gln Lys Pro Phe Phe Leu Lys Glu Ile
 115 120 125
 Pro Ile Gln Gly Val Gly His Pro Gly Ile
 130 135

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<220>
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 <222> (121)..(150)

<223> note="Xaa signifies gap in sequence"

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Glu Asn Gln Asp Asp Cys Arg Asp His Arg Cys Gln Asn Gly Ala Gln
20 25 30

Cys Met Asp Glu Val Asn Ser Tyr Ser Cys Leu Cys Ala Glu Gly Tyr
35 40 45

Ser Gly Gln Leu Cys Glu Ile Pro Pro His Leu Pro Ala Pro Lys Ser
50 55 60

Pro Cys Glu Gly Thr Glu Cys Gln Asn Gly Ala Asn Cys Val Asp Gln
65 70 75 80

Gly Asn Arg Pro Val Cys Gln Cys Leu Pro Gly Phe Gly Gly Pro Glu
85 90 95

Cys Glu Lys Leu Leu Ser Val Asn Phe Val Asp Arg Asp Thr Tyr Leu
100 105 110

Gln Phe Thr Asp Leu Gln Asn Trp Xaa Arg Xaa Asn Ile Thr Leu Gln
115 120 125

Val Phe Thr Ala Glu Asp Asn Gly Ile Leu Leu Tyr Asn Gly Gly Asn
130 135 140

Asp His Ile Ala Val Xaa Leu Tyr Xaa Gly His Val Arg Phe Ser Tyr
145 150 155 160

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<212> PRT

<213> human

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Gln Cys His Ile Ser Asp Gln Gly Glu Pro Tyr Cys Leu Cys Gln Pro
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Gly Phe Ser Gly Glu His Cys Gln Gln Glu Asn Pro Cys Leu Gly Gln
20 25 30

Val Val Arg Glu Val Ile Arg Arg Gln Lys Gly Tyr Ala Ser Cys Ala
35 40 45

Thr Ala Ser Lys Val Pro Ile Met Glu Cys Arg Gly Gly Cys Gly Pro
50 55 60

Gln Cys Cys Gln Pro Thr Arg Ser Lys Arg Arg Lys Tyr Val Phe Gln
65 70 75 80

Cys Thr Asp Gly Ser Ser Phe Val Glu Glu Val Glu Arg His Leu Glu
85 90 95

Cys Gly Cys Leu Ala Cys Ser
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<210> 7

<211> 1480

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Leu	Pro	Pro	Lys	Ser	Phe	Ser	Ser	Phe	Arg	Arg	Leu	Arg	Arg	Ile	Asp
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Leu	Ser	Asn	Asn	Asn	Ile	Ser	Arg	Ile	Ala	His	Asp	Ala	Leu	Ser	Gly
		355					360					365			
Leu	Lys	Gln	Leu	Thr	Thr	Leu	Val	Leu	Tyr	Gly	Asn	Lys	Ile	Lys	Asp
	370					375					380				
Leu	Pro	Ser	Gly	Val	Phe	Lys	Gly	Leu	Gly	Ser	Leu	Arg	Leu	Leu	Leu
385					390					395					400
Leu	Asn	Ala	Asn	Glu	Ile	Ser	Cys	Ile	Arg	Lys	Asp	Ala	Phe	Arg	Asp
				405					410					415	
Leu	His	Ser	Leu	Ser	Leu	Leu	Ser	Leu	Tyr	Asp	Asn	Asn	Ile	Gln	Ser
			420					425					430		
Leu	Ala	Asn	Gly	Thr	Phe	Asp	Ala	Met	Lys	Ser	Met	Lys	Thr	Val	His
		435					440					445			
Leu	Ala	Lys	Asn	Pro	Phe	Ile	Cys	Asp	Cys	Asn	Leu	Arg	Trp	Leu	Ala
	450					455					460				
Asp	Tyr	Leu	His	Lys	Asn	Pro	Ile	Glu	Thr	Ser	Gly	Ala	Arg	Cys	Glu
465					470					475					480
Ser	Pro	Lys	Arg	Met	His	Arg	Arg	Arg	Ile	Glu	Ser	Leu	Arg	Glu	Glu
				485					490					495	
Lys	Phe	Lys	Cys	Ser	Trp	Gly	Glu	Leu	Arg	Met	Lys	Leu	Ser	Gly	Glu
			500					505					510		
Cys	Arg	Met	Asp	Ser	Asp	Cys	Pro	Ala	Met	Cys	His	Cys	Glu	Gly	Thr
		515					520					525			
Thr	Val	Asp	Cys	Thr	Gly	Arg	Arg	Leu	Lys	Glu	Ile	Pro	Arg	Asp	Ile
	530					535					540				
Pro	Leu	His	Thr	Thr	Glu	Leu	Leu	Leu	Asn	Asp	Asn	Glu	Leu	Gly	Arg
545					550					555					560
Ile	Ser	Ser	Asp	Gly	Leu	Phe	Gly	Arg	Leu	Pro	His	Leu	Val	Lys	Leu
				565					570					575	
Glu	Leu	Lys	Arg	Asn	Gln	Leu	Thr	Gly	Ile	Glu	Pro	Asn	Ala	Phe	Glu
			580					585					590		
Gly	Ala	Ser	His	Ile	Gln	Glu	Leu	Gln	Leu	Gly	Glu	Asn	Lys	Ile	Lys
		595					600					605			
Glu	Ile	Ser	Asn	Lys	Met	Phe	Leu	Gly	Leu	His	Gln	Leu	Lys	Thr	Leu
	610					615					620				
Asn	Leu	Tyr	Asp	Asn	Gln	Ile	Ser	Cys	Val	Met	Pro	Gly	Ser	Phe	Glu
625					630					635					640
His	Leu	Asn	Ser	Leu	Thr	Ser	Leu	Asn	Leu	Ala	Ser	Asn	Pro	Phe	Asn
				645					650					655	
Cys	Asn	Cys	His	Leu	Ala	Trp	Phe	Ala	Glu	Cys	Val	Arg	Lys	Lys	Ser
			660					665					670		
Leu	Asn	Gly	Gly	Ala	Ala	Arg	Cys	Gly	Ala	Pro	Ser	Lys	Val	Arg	Asp
		675					680					685			

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Val	Gln	Ile	Lys	Asp	Leu	Pro	His	Ser	Glu	Phe	Lys	Cys	Ser	Ser	Glu
690						695					700				
Asn	Ser	Glu	Gly	Cys	Leu	Gly	Asp	Gly	Tyr	Cys	Pro	Pro	Ser	Cys	Thr
705					710					715					720
Cys	Thr	Gly	Thr	Val	Val	Ala	Cys	Ser	Arg	Asn	Gln	Leu	Lys	Glu	Ile
				725					730					735	
Pro	Arg	Gly	Ile	Pro	Ala	Glu	Thr	Ser	Glu	Leu	Tyr	Leu	Glu	Ser	Asn
			740					745					750		
Glu	Ile	Glu	Gln	Ile	His	Tyr	Glu	Arg	Ile	Arg	His	Leu	Arg	Ser	Leu
		755					760					765			
Thr	Arg	Leu	Asp	Leu	Ser	Asn	Asn	Gln	Ile	Thr	Ile	Leu	Ser	Asn	Tyr
	770					775					780				
Thr	Phe	Ala	Asn	Leu	Thr	Lys	Leu	Ser	Thr	Leu	Ile	Ile	Ser	Tyr	Asn
785					790					795					800
Lys	Leu	Gln	Cys	Leu	Gln	Arg	His	Ala	Leu	Ser	Gly	Leu	Asn	Asn	Leu
				805					810					815	
Arg	Val	Val	Ser	Leu	His	Gly	Asn	Arg	Ile	Ser	Met	Leu	Pro	Glu	Gly
			820					825					830		
Ser	Phe	Glu	Asp	Leu	Lys	Ser	Leu	Thr	His	Ile	Ala	Leu	Gly	Ser	Asn
		835					840					845			
Pro	Leu	Tyr	Cys	Asp	Cys	Gly	Leu	Lys	Trp	Phe	Ser	Asp	Trp	Ile	Lys
	850					855					860				
Leu	Asp	Tyr	Val	Glu	Pro	Gly	Ile	Ala	Arg	Cys	Ala	Glu	Pro	Glu	Gln
865					870					875					880
Met	Lys	Asp	Lys	Leu	Ile	Leu	Ser	Thr	Pro	Ser	Ser	Ser	Phe	Val	Cys
				885					890					895	
Arg	Gly	Arg	Val	Arg	Asn	Asp	Ile	Leu	Ala	Lys	Cys	Asn	Ala	Cys	Phe
			900					905					910		
Glu	Gln	Pro	Cys	Gln	Asn	Gln	Ala	Gln	Cys	Val	Ala	Leu	Pro	Gln	Arg
		915					920					925			
Glu	Tyr	Gln	Cys	Leu	Cys	Gln	Pro	Gly	Tyr	His	Gly	Lys	His	Cys	Glu
	930					935					940				
Phe	Met	Ile	Asp	Ala	Cys	Tyr	Gly	Asn	Pro	Cys	Arg	Asn	Asn	Ala	Thr
945					950					955					960
Cys	Thr	Val	Leu	Glu	Glu	Gly	Arg	Phe	Ser	Cys	Gln	Cys	Ala	Pro	Gly
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Tyr	Thr	Gly	Ala	Arg	Cys	Glu	Thr	Asn	Ile	Asp	Asp	Cys	Leu	Gly	Glu
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Ile	Lys	Cys	Gln	Asn	Asn	Ala	Thr	Cys	Ile	Asp	Gly	Val	Glu	Ser	Tyr
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Lys	Cys	Glu	Cys	Gln	Pro	Gly	Phe	Ser	Gly	Glu	Phe	Cys	Asp	Thr	Lys
	1010					1015					1020				
Ile	Gln	Phe	Cys	Ser	Pro	Glu	Phe	Asn	Pro	Cys	Ala	Asn	Gly	Ala	Lys
1025					1030					1035					1040

Cys	Met	Asp	His	Phe	Thr	His	Tyr	Ser	Cys	Asp	Cys	Gln	Ala	Gly	Phe
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His	Gly	Thr	Asn	Cys	Thr	Asp	Asn	Ile	Asp	Asp	Cys	Gln	Asn	His	Met
			1060				1065						1070		
Cys	Gln	Asn	Gly	Gly	Thr	Cys	Val	Asp	Gly	Ile	Asn	Asp	Tyr	Gln	Cys
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Arg	Cys	Pro	Asp	Asp	Tyr	Thr	Gly	Lys	Tyr	Cys	Glu	Gly	His	Asn	Met
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Ile	Ser	Met	Met	Tyr	Pro	Gln	Thr	Ser	Pro	Cys	Gln	Asn	His	Glu	Cys
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Lys	His	Gly	Val	Cys	Phe	Gln	Pro	Asn	Ala	Gln	Gly	Ser	Asp	Tyr	Leu
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Cys	Arg	Cys	His	Pro	Gly	Tyr	Thr	Gly	Lys	Trp	Cys	Glu	Tyr	Leu	Thr
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Ser	Ile	Ser	Phe	Val	His	Asn	Asn	Ser	Phe	Val	Glu	Leu	Glu	Pro	Leu
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Arg	Thr	Arg	Pro	Glu	Ala	Asn	Val	Thr	Ile	Val	Phe	Ser	Ser	Ala	Glu
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Gln	Asn	Gly	Ile	Leu	Met	Tyr	Asp	Gly	Gln	Asp	Ala	His	Leu	Ala	Val
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Glu	Leu	Phe	Asn	Gly	Arg	Ile	Arg	Val	Ser	Tyr	Asp	Val	Gly	Asn	His
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Pro	Val	Ser	Thr	Met	Tyr	Ser	Phe	Glu	Met	Val	Ala	Asp	Gly	Lys	Tyr
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His	Ala	Val	Glu	Leu	Leu	Ala	Ile	Lys	Lys	Asn	Phe	Thr	Leu	Arg	Val
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Asp	Arg	Gly	Leu	Ala	Arg	Ser	Ile	Ile	Asn	Glu	Gly	Ser	Asn	Asp	Tyr
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Leu	Lys	Leu	Thr	Thr	Pro	Met	Phe	Leu	Gly	Gly	Leu	Pro	Val	Asp	Pro
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Ala	Gln	Gln	Ala	Tyr	Lys	Asn	Trp	Gln	Ile	Arg	Asn	Leu	Thr	Ser	Phe
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Glu	Thr	Pro	His	Ile	Lys	Glu	Glu	Pro	Val	Asp	Pro	Cys	Leu	Glu	Asn
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Lys	Cys	Arg	Arg	Gly	Ser	Arg	Cys	Val	Pro	Asn	Ser	Asn	Ala	Arg	Asp
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Gln Gly Glu Gly Ser Thr Glu Pro Pro Thr Val Thr Ala Ala Ser Thr
1395 1400 1405
Cys Arg Lys Glu Gln Val Arg Glu Tyr Tyr Thr Glu Asn Asp Cys Arg
1410 1415 1420
Ser Arg Gln Pro Leu Lys Tyr Ala Lys Cys Val Gly Gly Cys Gly Asn
1425 1430 1435 1440
Gln Cys Cys Ala Ala Lys Ile Val Arg Arg Arg Lys Val Arg Met Val
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Lys Arg Leu Arg Lys Lys Lys Phe Ala Thr Leu Pro Pro Asn Lys Phe
35 40 45
Lys Cys Lys Gly Ser Glu Ser Phe Val Ser Met Tyr Ala Asp Ser Cys
50 55 60
Phe Ile Asp Ser Ile Cys Pro Thr Gln Cys Asp Cys Tyr Gly Thr Thr
65 70 75 80
Val Asp Cys Asn Lys Arg Gly Leu Asn Thr Ile Pro Thr Ser Ile Pro
85 90 95
Arg Phe Ala Thr Gln Leu Leu Leu Ser Gly Asn Asn Ile Ser Thr Val
100 105 110
Asp Leu Asn Ser Asn Ile His Val Leu Glu Asn Leu Glu Xaa Leu Asp
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Asp Leu Asn Arg Leu Tyr Ser Leu Thr Lys Leu Asp Leu Ser His Asn
 35      40      45
Arg Leu Ile Ser Leu Glu Asn Asn Thr Phe Ser Asn Leu Thr Arg Leu
 50      55      60
Ser Thr Leu Ile Ile Ser Tyr Asn Lys Leu Arg Cys Leu Gln Pro Leu
 65      70      75      80
Ala Phe Asn Gly Leu Asn Ala Leu Arg Ile Leu Ser Leu His Gly Asn
 85      90      95
Asp Ile Ser Phe Leu Pro Gln Ser Ala Phe Ser Asn Leu Thr Ser Ile
 100     105     110
Thr His Ile Ala Val Gly Ser Asn Ser Leu Tyr Cys Asp Cys Asn Met
 115     120     125
Ala Trp Phe Ser Lys Trp Ile Lys Ser Lys Phe Ile Glu Ala Gly Ile
 130     135     140
Ala Arg Cys Glu Tyr Pro Asn Thr Val Ser Asn Gln Leu Leu Leu Thr
 145     150     155     160
Ala Gln Pro Tyr Gln Phe Thr Cys Asp Ser Lys Val Pro Thr Lys Leu
 165     170
Ala Thr Lys Cys Asp Leu Cys Leu Asn Ser Pro Cys Lys Asn Asn Ala
 180     185     190
Ile Cys Glu Thr Thr Ser Ser Arg Lys Tyr Thr Cys Asn Cys Thr Pro
 195     200     205
Gly Phe Tyr Gly Val His Cys Glu Asn Gln Ile Asp Ala Cys Tyr Gly
 210     215     220
Ser Pro Cys Leu Asn Asn Ala Thr Cys Lys Val Ala Gln Ala Gly Arg
 225     230     235     240
Phe Asn Cys Tyr Cys Asn Lys Gly Phe Glu Gly Asp Tyr Cys Glu Lys
 245     250     255
Asn Ile Asp Asp Cys Val Asn Ser Lys Cys Glu Asn Gly Gly Lys Cys
 260     265     270
Val Asp Leu Val Arg Phe Cys Ser Glu Glu Leu Lys Asn Phe Gln Ser
 275     280     285
Phe Gln Ile Asn Ser Tyr Arg Cys Asp Cys Pro Met Glu Tyr Glu Gly
 290     295     300
Lys His Cys Glu Asp Lys Leu Glu Tyr Cys Thr Lys Lys Leu Asn Pro
 305     310     315     320
Cys Glu Asn Asn Gly Lys Cys Ile Pro Ile Asn Gly Ser Tyr Ser Cys
 325     330     335
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Ile	Leu	Ser	Tyr	Asp	Cys	Leu	Cys	Arg	Pro	Gly	Tyr	Ala	Gly	Gln	Tyr
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Cys	Glu	Ile	Pro	Pro	Met	Met	Asp	Met	Glu	Tyr	Gln	Lys	Thr	Asp	Ala
385					390					395					400
Cys	Gln	Gln	Ser	Ala	Cys	Gly	Gln	Gly	Glu	Cys	Val	Ala	Ser	Gln	Asn
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Ser	Ser	Asp	Phe	Thr	Cys	Lys	Cys	His	Glu	Gly	Phe	Ser	Gly	Pro	Ser
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Cys	Asp	Arg	Gln	Met	Ser	Val	Gly	Phe	Lys	Asn	Pro	Gly	Ala	Tyr	Leu
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Ala	Leu	Asp	Pro	Leu	Ala	Ser	Asp	Gly	Thr	Ile	Thr	Met	Thr	Leu	Arg
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465					470					475					480
Val	Ser	Ala	Glu	Leu	Tyr	Asp	Gly	Arg	Val	Lys	Leu	Val	Tyr	Tyr	Ile
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Gly	Asn	Phe	Pro	Ala	Ser	His	Met	Tyr	Ser	Ser	Val	Lys	Val	Asn	Asp
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Gly	Leu	Pro	His	Arg	Ile	Ser	Ile	Arg	Thr	Ser	Glu	Arg	Lys	Cys	Phe
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Ser	Asp	Gln	Leu	Ile	Thr	Lys	Gly	Lys	Glu	Met	Leu	Tyr	Ile	Gly	Gly
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Leu	Pro	Ile	Glu	Lys	Ser	Gln	Asp	Ala	Lys	Arg	Arg	Phe	His	Val	Lys
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Asn	Ser	Glu	Ser	Leu	Lys	Gly	Cys	Ile	Ser	Ser	Ile	Thr	Ile	Asn	Glu
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Val	Pro	Ile	Asn	Leu	Gln	Gln	Ala	Leu	Glu	Asn	Val	Asn	Thr	Glu	Gln
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	610					615					620				
Gly	Lys	Cys	Thr	Asn	Asn	Ala	Leu	Ser	Pro	Lys	Gly	Tyr	Met	Cys	Gln
625					630					635					640
Cys	Asp	Ser	His	Phe	Ser	Gly	Glu	His	Cys	Asp	Glu	Lys	Arg	Ile	Lys
				645					650					655	
Cys	Asp	Lys	Gln	Lys	Phe	Arg	Arg	His	His	Ile	Glu	Asn	Glu	Cys	Arg
			660					665					670		
Ser	Val	Asp	Arg	Ile	Lys	Ile	Ala	Glu	Cys	Asn	Gly	Tyr	Cys	Gly	Gly
		675					680					685			
Glu	Gln	Asn	Cys	Cys	Thr	Ala	Val	Lys	Lys	Lys	Gln	Arg	Lys	Val	Lys

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690 695 700

Met Ile Cys Lys Asn Gly Thr Thr Lys Ile Ser Thr Val His Ile Ile
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Arg Gln Cys Gln Cys Glu Pro Thr Lys Ser Val Leu Ser Glu Lys
725 730 735

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Gln Asn Gly Ala Gln Cys Val Asp Glu Val Asn Ser Tyr Ala Cys Leu
35 40 45

Cys Val Glu Gly Tyr Ser Gly Gln Leu Cys Glu Ile Pro Pro Ala Pro
50 55 60

Arg Ser Ser Cys Glu Gly Thr Glu Cys Gln Asn Gly Ala Asn Cys Val
65 70 75 80

Asp Gln Gly Ser Arg Pro Val Cys Gln Cys Leu Pro Gly Phe Gly Gly
85 90 95

Pro Glu Cys Glu Lys Leu Leu Ser Val Asn Phe Val Asp Arg Asp Thr
100 105 110

Tyr Leu Gln Phe Thr Asp Leu Gln Asn Trp Pro Arg Ala Asn Ile Thr
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Leu Gln Val Ser Thr Ala Glu Asp Asn Gly Ile Leu Leu Tyr Asn Gly
130 135 140

Asp Asn Asp His Ile Ala Val Glu Leu Tyr
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Pro Tyr Cys Leu Cys Gln Pro Gly Phe Ser Gly His His Cys Glu Gln
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Glu Asn Pro Cys Met Gly Glu Ile Val Arg Glu Ala Ile Arg Arg Gln
35 40 45

Lys Asp Tyr Ala Ser Cys Ala Thr Ala Ser Lys Val Pro Ile Met Glu
50 55 60

Cys Arg Gly Gly Cys Gly Thr Thr Cys Cys Gln Pro Ile Arg Ser Lys
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Arg Arg Lys Tyr Val Phe Gln Cys Thr Asp Gly Ser Ser Phe Val Glu
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Glu Val Glu Arg His Leu Glu Cys Gly Cys Arg Ala Cys Ser
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Arg Asn Asn Leu Gln Leu Phe Pro Glu Leu Leu Phe Leu Gly Thr Ala
35 40 45

Arg Leu Tyr Arg Leu Asp Leu Ser Glu Asn Gln Ile Gln Ala Ile Pro
50 55 60

Arg Lys Ala Phe Arg Gly Ala Val Asp Ile Lys Asn Leu Gln Leu Asp
65 70 75 80

Tyr Asn Gln Ile Ser Cys Ile Glu Asp Gly Ala Phe Arg Ala Leu Arg
85 90 95

Asp Leu Glu Val Leu Thr Leu Asn Asn Asn Ile Thr Arg Leu Ser
100 105 110

Val Ala Ser Phe Asn His Met Pro Lys Leu Arg Thr Phe Arg Leu His
115 120 125

Ser Asn Asn Leu Tyr Cys
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Val Asp Glu Val Asn Gly Tyr Thr Cys Ile Cys Pro Gln Gly Phe Ser
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Gly Leu Phe Cys Glu His Pro Pro Pro Met Val Leu Leu Gln Thr Ser
35 40 45

Pro Cys Asp Gln Tyr Glu Cys Gln Asn Gly Ala Gln Cys Ile Val Val
50 55 60

Gln Gln Glu Pro Thr Cys Arg Cys Pro Pro Gly Phe Ala Gly Pro Arg
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Cys Glu Lys Leu Ile Thr Val Asn Phe Val Gly Lys Asp Ser Tyr Val
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Glu Leu Ala Ser Ala Lys Val Arg
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<400> 14

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Asp Phe Arg Lys Met Pro Met Gln Thr Gly Ile Leu Pro Gly Cys Glu
35 40 45
Pro Cys His Lys Lys Val Cys Ala His Gly Cys Cys Gln Pro Ser Ser
50 55 60
Gln Ser Gly Phe Thr Cys Glu Cys Glu Glu Gly Trp Met Gly Pro Leu
65 70 75 80
Cys Asp Gln Arg Thr Asn Asp Pro Cys Leu Gly Asn Lys Cys Val His
85 90 95
Gly Thr Cys Leu Pro Ile Asn Ala Phe Ser Tyr Ser Cys Lys Cys Leu
100 105 110
Glu Gly His Gly Gly Val Leu Cys Asp Glu Glu Glu Asp Leu Phe Asn
115 120 125
Pro Cys Gln Met Ile Lys Cys Lys His Gly Lys Cys Arg Leu Ser Gly
130 135 140
Val Gly Gln Pro Tyr Cys Glu Cys Asn Ser Gly Phe Thr Gly Asp Ser
145 150 155 160
Cys Asp Arg Glu Ile Ser Cys Arg Gly Glu Arg Ile Arg Asp Tyr Tyr
165 170 175
Gln Lys Gln Gln Gly Tyr Ala Ala Cys Gln Thr Thr Lys Lys Val Ser
180 185 190
Arg Leu Glu Cys Arg Gly Gly Cys Ala Gly Gly Gln Cys Cys Gly Pro
195 200 205
Leu Arg Ser Lys Arg Arg Lys Tyr Ser Phe Glu Cys Thr Asp Gly Ser
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Ser Phe Val Asp Glu Val Glu Lys Val Val Lys Cys Gly Cys Ala Arg
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Cys Ala Ser

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<213> Drosophila melanogaster

<400> 15

Met His Pro Met His Pro Glu Asn His Ala Ile Ala Arg Ser Thr Ser

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Pro	Ala	Trp	Leu	Leu	Leu	Val	Leu	Val	Ala	Ala	Ser	Asn	Gly	Leu	Pro	Ala		
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Val	Arg	Gly	Gln	Tyr	Gln	Ser	Pro	Arg	Ile	Ile	Glu	His	Pro	Thr	Asp			
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Leu	Val	Val	Lys	Lys	Asn	Glu	Pro	Ala	Thr	Leu	Asn	Cys	Lys	Val	Glu	80		
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Gly	Lys	Pro	Glu	Pro	Thr	Ile	Glu	Trp	Phe	Lys	Asp	Gly	Glu	Pro	Val			
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Ser	Thr	Asn	Glu	Lys	Lys	Ser	His	Arg	Val	Gln	Phe	Lys	Asp	Gly	Ala			
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Leu	Phe	Phe	Tyr	Arg	Thr	Met	Gln	Gly	Lys	Lys	Glu	Gln	Asp	Gly	Gly			
115														125				
Glu	Tyr	Trp	Cys	Val	Ala	Lys	Asn	Arg	Val	Gly	Gln	Ala	Val	Ser	Arg			
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Pro	Lys	Asp	Thr	Arg	Val	Ala	Lys	Gly	Glu	Thr	Ala	Leu	Leu	Glu	Cys			
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180														190				
Gly	Val	Pro	Leu	Asp	Asp	Leu	Lys	Ala	Met	Ser	Phe	Gly	Ala	Ser	Ser			
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Arg	Val	Arg	Ile	Val	Asp	Gly	Asn	Leu	Leu	Ile	Ser	Asn	Val	Glu				
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225														235				
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Thr	Tyr	Val	Cys	Glu	Ala	His	Asn	Asn	Val	Gly	Gln	Ile	Ser	Ala	Arg			
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Al																		

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Asp	Leu	Gln	Thr	Gly	Trp	Ile	Val	Ala	Ala	His	Arg	Val	Gly	Asp	Thr
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Gln	Val	Thr	Ile	Ser	Gly	Leu	Thr	Pro	Gly	Thr	Ser	Tyr	Val	Phe	Leu
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Asn	Val	Ile	Lys	Thr	Ile	Glu	Ala	Asp	Phe	Asp	Ala	Ala	Ser	Ala	Asn
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Ile	Asp	Ala	Ser	Ala	Ile	Asn	Ala	Ser	Ala	Val	Arg	Leu	Glu	Trp	Met
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Leu	His	Val	Ser	Ala	Asp	Glu	Lys	Tyr	Val	Glu	Gly	Leu	Arg	Ile	His
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Tyr	Lys	Asp	Ala	Ser	Val	Pro	Ser	Ala	Gln	Tyr	His	Ser	Ile	Thr	Val
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Met	Asp	Ala	Ser	Ala	Glu	Ser	Phe	Val	Val	Gly	Asn	Leu	Lys	Lys	Tyr
				725					730					735	
Thr	Lys	Tyr	Glu	Phe	Phe	Leu	Thr	Pro	Phe	Phe	Glu	Thr	Ile	Glu	Gly
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Gln	Pro	Ser	Asn	Ser	Lys	Thr	Ala	Leu	Thr	Tyr	Glu	Asp	Val	Pro	Ser
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Ala	Pro	Pro	Asp	Asn	Ile	Gln	Ile	Gly	Met	Tyr	Asn	Gln	Thr	Ala	Gly
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Trp	Val	Arg	Trp	Thr	Pro	Pro	Pro	Ser	Gln	His	His	Asn	Gly	Asn	Leu
785					790					795					800
Tyr	Gly	Tyr	Lys	Ile	Glu	Val	Ser	Ala	Gly	Asn	Thr	Met	Lys	Val	Leu
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Ala	Asn	Met	Thr	Leu	Asn	Ala	Thr	Thr	Thr	Ser	Val	Leu	Leu	Asn	Asn
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Leu	Thr	Thr	Gly	Ala	Val	Tyr	Ser	Val	Arg	Leu	Asn	Ser	Phe	Thr	Lys
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Ala	Gly	Asp	Gly	Pro	Tyr	Ser	Lys	Pro	Ile	Ser	Leu	Phe	Met	Asp	Pro
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Thr	His	His	Val	His	Pro	Pro	Arg	Ala	His	Pro	Ser	Gly	Thr	His	Asp
865					870					875					880
Gly	Arg	His	Glu	Gly	Gln	Asp	Leu	Thr	Tyr	His	Asn	Asn	Gly	Asn	Ile
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Pro	Pro	Gly	Asp	Ile	Asn	Pro	Thr	Thr	His	Lys	Lys	Thr	Thr	Asp	Tyr
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 <213> Drosophila melanogaster

<400> 16

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Asp	Thr	Ala	Thr	Arg	Arg	Gln	Leu	Asn	Arg	Gly	Ser	Thr	Pro	Arg	Glu		
	1170				1175						1180						
Asp	Thr	Tyr	Asp	Ser	Val	Ser	Asp	Gly	Ala	Phe	Ala	Arg	Val	Asp	Val		
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Asn	Ala	Arg	Pro	Thr	Ser	Arg	Asn	Arg	Asn	Leu	Gly	Gly	Arg	Pro	Leu		
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Lys	Gly	Lys	Arg	Asp	Asp	Asp	Ser	Gln	Arg	Ser	Ser	Leu	Met	Met	Asp		
			1220					1225				1230					
Asp	Asp	Gly	Gly	Ser	Ser	Glu	Ala	Asp	Gly	Glu	Asn	Ser	Glu	Gly	Asp		
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Val	Pro	Arg	Gly	Gly	Val	Arg	Lys	Ala	Val	Pro	Arg	Met	Gly	Ile	Ser		
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Ala	Ser	Thr	Leu	Ala	His	Ser	Cys	Tyr	Gly	Thr	Asn	Gly	Thr	Ala	Gln		
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Arg	Phe	Arg	Ser	Ile	Pro	Arg	Asn	Asn	Gly	Ile	Val	Thr	Gln	Glu	Gln		
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Thr																	

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Asp	Val	Glu	Arg	Gly	Asn	Asp	His	Gly	Thr	Pro	Ile	Pro	Thr	Ser	Asp
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Asn	Asp	Asp	Asn	Ser	Leu	Gly	Tyr	Thr	Gly	Ser	Arg	Leu	Arg	Gln	Glu
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Asp	Phe	Pro	Pro	Arg	Ile	Val	Glu	His	Pro	Ser	Asp	Leu	Ile	Val	Ser
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Lys	Gly	Glu	Pro	Ala	Thr	Leu	Asn	Cys	Lys	Ala	Glu	Gly	Arg	Pro	Thr
				85					90					95	
Pro	Thr	Ile	Glu	Trp	Tyr	Lys	Gly	Gly	Glu	Arg	Val	Glu	Thr	Asp	Lys
			100					105					110		
Asp	Asp	Pro	Arg	Ser	His	Arg	Met	Leu	Leu	Pro	Ser	Gly	Ser	Leu	Phe
		115					120					125			
Phe	Leu	Arg	Ile	Val	His	Gly	Arg	Lys	Ser	Arg	Pro	Asp	Glu	Gly	Val
	130					135					140				
Tyr	Val	Cys	Val	Ala	Arg	Asn	Tyr	Leu	Gly	Glu	Ala	Val	Ser	His	Asn
145					150					155					160
Ala	Ser	Leu	Glu	Val	Ala	Ile	Leu	Arg	Asp	Asp	Phe	Arg	Gln	Asn	Pro
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Ser	Asp	Val	Met	Val	Ala	Val	Gly	Glu	Pro	Ala	Val	Met	Glu	Cys	Gln
			180					185					190		
Pro	Pro	Arg	Gly	His	Pro	Glu	Pro	Thr	Ile	Ser	Trp	Lys	Lys	Asp	Gly
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Ser	Pro	Leu	Asp	Asp	Lys	Asp	Glu	Arg	Ile	Thr	Ile	Arg	Gly	Gly	Lys
	210					215					220				
Leu	Met	Ile	Thr	Tyr	Thr	Arg	Lys	Ser	Asp	Ala	Gly	Lys	Tyr	Val	Cys
225					230					235					240
Val	Gly	Thr	Asn	Met	Val	Gly	Glu	Arg	Glu	Ser	Glu	Val	Ala	Glu	Leu
				245					250					255	
Thr	Val	Leu	Glu	Arg	Pro	Ser	Phe	Val	Lys	Arg	Pro	Ser	Asn	Leu	Ala
			260					265					270		
Val	Thr	Val	Asp	Asp	Ser	Ala	Glu	Phe	Lys	Cys	Glu	Ala	Arg	Gly	Asp
		275					280					285			
Pro	Val	Pro	Thr	Val	Arg	Trp	Arg	Lys	Asp	Asp	Gly	Glu	Leu	Pro	Lys
	290					295					300				
Ser	Arg	Tyr	Glu	Ile	Arg	Asp	Asp	His	Thr	Leu	Lys	Ile	Arg	Lys	Val
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Thr	Ala	Gly	Asp	Met	Gly	Ser	Tyr	Thr	Cys	Val	Ala	Glu	Asn	Met	Val
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Gly	Lys	Ala	Glu	Ala	Ser	Ala	Thr	Leu	Thr	Val	Gln	Glu	Pro	Pro	His
			340					345					350		
Phe	Val	Val	Lys	Pro	Arg	Asp	Gln	Val	Val	Ala	Leu	Gly	Arg	Thr	Val
		355					360					365			
Thr	Phe	Gln	Cys	Glu	Ala	Thr	Gly	Asn	Pro	Gln	Pro	Ala	Ile	Phe	Trp
	370					375									

Pro	Ser	Ala	Pro	Ser	Lys	Pro	Glu	Val	Thr	Asp	Val	Ser	Arg	Asn	Thr
				565					570					575	
Val	Thr	Leu	Ser	Trp	Gln	Pro	Asn	Leu	Asn	Ser	Gly	Ala	Thr	Pro	Thr
			580					585					590		
Ser	Tyr	Ile	Ile	Glu	Ala	Phe	Ser	His	Ala	Ser	Gly	Ser	Ser	Trp	Gln
		595					600					605			
Thr	Val	Ala	Glu	Asn	Val	Lys	Thr	Glu	Thr	Ser	Ala	Ile	Lys	Gly	Leu
	610					615					620				
Lys	Pro	Asn	Ala	Ile	Tyr	Leu	Phe	Leu	Val	Arg	Ala	Ala	Asn	Ala	Tyr
625					630					635					640
Gly	Ile	Ser	Asp	Pro	Ser	Gln	Ile	Ser	Asp	Pro	Val	Lys	Thr	Gln	Asp
				645					650					655	
Val	Leu	Pro	Thr	Ser	Gln	Gly	Val	Asp	His	Lys	Gln	Val	Gln	Arg	Glu
			660					665					670		
Leu	Gly	Asn	Ala	Val	Leu	His	Leu	His	Asn	Pro	Thr	Val	Leu	Ser	Ser
		675					680					685			
Ser	Ser	Ile	Glu	Val	His	Trp	Thr	Val	Asp	Gln	Gln	Ser	Gln	Tyr	Ile
		690				695					700				
Gln	Gly	Tyr	Lys	Ile	Leu	Tyr	Arg	Pro	Ser	Gly	Ala	Asn	His	Gly	Glu
705					710					715					720
Ser	Asp	Trp	Leu	Val	Phe	Glu	Val	Arg	Thr	Pro	Ala	Lys	Asn	Ser	Val
				725					730					735	
Val	Ile	Pro	Asp	Leu	Arg	Lys	Gly	Val	Asn	Tyr	Glu	Ile	Lys	Ala	Arg
			740					745					750		
Pro	Phe	Phe	Asn	Glu	Phe	Gln	Gly	Ala	Asp	Ser	Glu	Ile	Lys	Phe	Ala
		755					760					765			
Lys	Thr	Leu	Glu	Glu	Ala	Pro	Ser	Ala	Pro	Pro	Gln	Gly	Val	Thr	Val
	770					775					780				
Ser	Lys	Asn	Asp	Gly	Asn	Gly	Thr	Ala	Ile	Leu	Val	Ser	Trp	Gln	Pro
785					790					795					800
Pro	Pro	Glu	Asp	Thr	Gln	Asn	Gly	Met	Val	Gln	Glu	Tyr	Lys	Val	Trp
				805					810					815	
Cys	Leu	Gly	Asn	Glu	Thr	Arg	Tyr	His	Ile	Asn	Lys	Thr	Val	Asp	Gly
			820					825					830		
Ser	Thr	Phe	Ser	Val	Val	Ile	Pro	Phe	Leu	Val	Pro	Gly	Ile	Arg	Tyr
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Ser	Val	Glu	Val	Ala	Ala	Ser	Thr	Gly	Ala	Gly	Ser	Gly	Val	Lys	Ser
	850					855					860				
Glu	Pro	Gln	Phe	Ile	Gln	Leu	Asp	Ala	His	Gly	Asn	Pro	Val	Ser	Pro
					870					875					880
Glu	Asp	Gln	Val	Ser	Leu	Ala	Gln	Gln	Ile	Ser	Asp	Val	Val	Lys	Gln
				885					890					895	
Pro	Ala	Phe	Ile	Ala	Gly	Ile	Gly	Ala	Ala	Cys	Trp	Ile	Ile	Leu	Met
			900					905					910		
Val	Phe	Ser	Ile	Trp	Leu	Tyr	Arg	His	Arg	Lys	Lys	Arg	Asn	Gly	Leu
		915					920					925			
Thr	Ser	Thr	Tyr	Ala	Gly	Ile	Arg	Lys	Val	Pro	Ser	Phe	Thr	Phe	Thr
		930				935					940				
Pro	Thr	Val	Thr	Tyr	Gln	Arg	Gly	Gly	Glu	Ala	Val	Ser	Ser	Gly	Gly
945					950				955						960
Arg	Pro	Gly	Leu	Leu	Asn	Ile	Ser	Glu	Pro	Ala	Ala	Gln	Pro	Trp	Leu
				965					970					975	
Ala	Asp	Thr	Trp	Pro	Asn	Thr	Gly	Asn	Asn	His	Asn	Asp	Cys	Ser	Ile
			980					985					990		
Ser	Cys	Cys	Thr	Ala	Gly	Asn	Gly	Asn	Ser	Asp	Ser	Asn	Leu	Thr	Thr
		995					1000					1005			
Tyr	Ser	Arg	Pro	Ala	Asp	Cys	Ile	Ala	Asn	Tyr	Asn	Asn	Gln	Leu	Asp
	1010					1015					1020				
Asn	Lys	Gln	Thr	Asn	Leu	Met	Leu	Pro	Glu	Ser	Thr	Val	Tyr	Gly	Asp
1025					1030					1035					1040
Val	Asp	Leu	Ser	Asn	Lys	Ile	Asn	Glu	Met	Lys	Thr	Phe	Asn	Ser	Pro
				1045					1050					1055	
Asn	Leu	Lys	Asp	Gly	Arg	Phe	Val	Asn	Pro	Ser	Gly	Gln	Pro	Thr	Pro
			1060					1065					1070		
Tyr	Ala	Thr	Thr	Gln	Leu	Ile	Gln	Ser	Asn	Leu	Ser	Asn	Asn	Met	Asn
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Asn	Gly	Ser	Gly	Asp	Ser	Gly	Glu	Lys	His	Trp	Lys	Pro	Leu	Gly	Gln

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Gln Lys Gln Glu Val	Ala Pro Val Gln Tyr	Asn Ile Val Glu Gln Asn
1105	1110	1115
Lys Leu Asn Lys Asp	Tyr Arg Ala Asn Asp	Thr Val Pro Pro Thr Ile
1125	1130	1135
Pro Tyr Asn Gln Ser	Tyr Asp Gln Asn Thr	Gly Gly Ser Tyr Asn Ser
1140	1145	1150
Ser Asp Arg Gly Ser	Ser Thr Ser Gly Ser	Gln Gly His Lys Lys Gly
1155	1160	1165
Ala Arg Thr Pro Lys	Val Pro Lys Gln Gly	Gly Met Asn Trp Ala Asp
1170	1175	1180
Leu Leu Pro Pro Pro	Pro Ala His Pro Pro	Pro His Ser Asn Ser Glu
1185	1190	1195
Glu Tyr Asn Ile Ser	Val Asp Glu Ser Tyr	Asp Gln Glu Met Pro Cys
1205	1210	1215
Pro Val Pro Pro Ala	Arg Met Tyr Leu Gln	Gln Asp Glu Leu Glu Glu
1220	1225	1230
Glu Glu Asp Glu Arg	Gly Pro Thr Pro Pro	Val Arg Gly Ala Ala Ser
1235	1240	1245
Ser Pro Ala Ala Val	Ser Tyr Ser His Gln	Ser Thr Ala Thr Leu Thr
1250	1255	1260
Pro Ser Pro Gln Glu	Glu Leu Gln Pro Met	Leu Gln Asp Cys Pro Glu
1265	1270	1275
Glu Thr Gly His Met	Gln His Gln Pro Asp	Arg Arg Arg Gln Pro Val
1285	1290	1295
Ser Pro Pro Pro Pro	Pro Arg Pro Ile Ser	Pro Pro His Thr Tyr Gly
1300	1305	1310
Tyr Ile Ser Gly Pro	Leu Val Ser Asp Met	Asp Thr Asp Ala Pro Glu
1315	1320	1325
Glu Glu Glu Asp Glu	Ala Asp Met Glu Val	Ala Lys Met Gln Thr Arg
1330	1335	1340
Arg Leu Leu Leu Arg	Gly Leu Glu Gln Thr	Pro Ala Ser Ser Val Gly
1345	1350	1355
Asp Leu Glu Ser Ser	Val Thr Gly Ser Met	Ile Asn Gly Trp Gly Ser
1365	1370	1375
Ala Ser Glu Glu Asp	Asn Ile Ser Ser Gly	Arg Ser Ser Val Ser Ser
1380	1385	1390
Ser Asp Gly Ser Phe	Phe Thr Asp Ala Asp	Phe Ala Gln Ala Val Ala
1395	1400	1405
Ala Ala Ala Glu Tyr	Ala Gly Leu Lys Val	Ala Arg Arg Gln Met Gln
1410	1415	1420
Asp Ala Ala Gly Arg	Arg His Phe His Ala	Ser Gln Cys Pro Arg Pro
1425	1430	1435
Thr Ser Pro Val Ser	Thr Asp Ser Asn Met	Ser Ala Ala Val Met Gln
1445	1450	1455
Lys Thr Arg Pro Ala	Lys Lys Leu Lys His	Gln Pro Gly His Leu Arg
1460	1465	1470
Arg Glu Thr Tyr Thr	Asp Asp Leu Pro Pro	Pro Pro Val Pro Pro Pro
1475	1480	1485
Ala Ile Lys Ser Pro	Thr Ala Gln Ser Lys	Thr Gln Leu Glu Val Arg
1490	1495	1500
Pro Val Val Val Pro	Lys Leu Pro Ser Met	Asp Ala Arg Thr Asp Arg
1505	1510	1515
Ser Ser Asp Arg Lys	Gly Ser Ser Tyr Lys	Gly Arg Glu Val Leu Asp
1525	1530	1535
Gly Arg Gln Val Val	Asp Met Arg Thr Asn	Pro Gly Asp Pro Arg Glu
1540	1545	1550
Ala Gln Glu Gln Gln	Asn Asp Gly Lys Gly	Arg Gly Asn Lys Ala Ala
1555	1560	1565
Lys Arg Asp Leu Pro	Pro Ala Lys Thr His	Leu Ile Gln Glu Asp Ile
1570	1575	1580
Leu Pro Tyr Cys Arg	Pro Thr Phe Pro Thr	Ser Asn Asn Pro Arg Asp
1585	1590	1595
Pro Ser Ser Ser Ser	Ser Met Ser Ser Arg	Gly Ser Gly Ser Arg Gln
1605	1610	1615
Arg Glu Gln Ala Asn	Val Gly Arg Arg Asn	Ile Ala Glu Met Gln Val
1620	1625	1630

Leu Gly Gly Tyr Glu Arg Gly Glu Asp Asn Asn Glu Glu Leu Glu Glu
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			20					25					30		
Leu	Leu	Phe	Pro	Asn	Gln	Pro	Gln	Gln	Pro	Asn	Ser	Arg	Cys	Ser	Val
		35					40					45			
Ser	Pro	Thr	Gly	Asp	Leu	Thr	Ile	Thr	Asn	Ile	Gln	Arg	Ser	Asp	Ala
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Gly	Tyr	Tyr	Ile	Cys	Gln	Ala	Leu	Thr	Val	Ala	Gly	Ser	Ile	Leu	Ala
65					70				75						80
Lys	Ala	Gln	Leu	Glu	Val	Thr	Asp	Val	Leu	Thr	Asp	Arg	Pro	Pro	Pro
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Ile	Ile	Leu	Gln	Gly	Pro	Ala	Asn	Gln	Thr	Leu	Ala	Val	Asp	Gly	Thr
			100					105					110		
Ala	Leu	Leu	Lys	Cys	Lys	Ala	Thr	Gly	Asp	Pro	Leu	Pro	Val	Ile	Ser
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Trp	Leu	Lys	Glu	Gly	Phe	Thr	Phe	Pro	Gly	Arg	Asp	Pro	Arg	Ala	Thr
	130					135					140				
Ile	Gln	Glu	Gln	Gly	Thr	Leu	Gln	Ile	Lys	Asn	Leu	Arg	Ile	Ser	Asp
145					150					155					160
Thr	Gly	Thr	Tyr	Thr	Cys	Val	Ala	Thr	Ser	Ser	Ser	Gly	Glu	Ala	Ser
				165					170					175	
Trp	Ser	Ala	Val	Leu	Asp	Val	Thr	Glu	Ser	Gly	Ala	Thr	Ile	Ser	Lys
		180						185					190		
Asn	Tyr	Asp	Leu	Ser	Asp	Leu	Pro	Gly	Pro	Pro	Ser	Lys	Pro	Gln	Val
		195					200					205			
Thr	Asp	Val	Thr	Lys	Asn	Ser	Val	Thr	Leu	Ser	Trp	Gln	Pro	Gly	Thr
	210					215					220				
Pro	Gly	Thr	Leu	Pro	Ala	Ser	Ala	Tyr	Ile	Ile	Glu	Ala	Phe	Ser	Gln
225					230					235					240
Ser	Val	Ser	Asn	Ser	Trp	Gln	Thr	Val	Ala	Asn	His	Val	Lys	Thr	Thr
			245						250					255	
Leu	Tyr	Thr	Val	Arg	Gly	Leu	Arg	Pro	Asn	Thr	Ile	Tyr	Leu	Phe	Met
			260					265					270		
Val	Arg	Ala	Ile	Asn	Pro	Lys	Val	Ser	Val	Thr	Gln	Xaa	Lys	Pro	Gln
		275					280					285			
Lys	Asn	Asn	Gly	Ser	Thr	Trp	Ala	Asn	Val	Pro	Leu	Pro	Pro	Pro	Pro
	290					295					300				
Val	Gln	Pro	Leu	Pro	Gly	Thr	Glu	Leu	Glu	His	Tyr	Ala	Val	Glu	Gln
305					310					315					320
Gln	Glu	Asn	Gly	Tyr	Asp	Ser	Asp	Ser	Trp	Cys	Pro	Pro	Leu	Pro	Val
			325						330					335	
Gln	Thr	Tyr	Leu	His	Gln	Gly	Leu	Glu	Asp	Glu	Leu	Glu	Glu	Asp	Asp
			340					345					350		
Asp	Arg	Val	Pro	Thr	Pro	Pro	Val	Arg	Gly	Val	Ala	Ser	Ser	Pro	Ala
		355					360					365			
Ile	Ser	Phe	Gly	Gln	Gln	Ser	Thr	Ala	Thr	Leu	Thr	Pro	Ser	Pro	Arg
	370					375					380				
Glu	Glu	Met	Gln	Pro	Met	Leu	Gln	Ala	Ser	Pro	Xaa	Phe	Thr	Ser	Ser

385					390					395					400
Gln	Arg	Pro	Arg	Pro	Thr	Ser	Pro	Phe	Ser	Thr	Asp	Ser	Asn	Thr	Ser
				405					410					415	
Ala	Ala	Leu	Ser	Gln	Ser	Gln	Arg	Pro	Arg	Pro	Thr	Lys	Lys	His	Lys
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Gly	Gly														

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Gln	Cys	Pro	Arg	Pro	Thr	Ser	Pro	Val	Ser	Thr	Asp	Ser	Asn	Met	Ser
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Ala	Val	Val	Ile	Gln	Lys	Ala	Arg	Pro	Ala	Lys	Lys	Gln	Lys	His	Gln
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Pro	Gly	His	Leu	Arg	Arg	Glu	Ala	Tyr	Ala	Asp	Asp	Leu	Pro	Pro	Pro
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Pro	Val	Pro	Pro	Pro	Ala	Ile	Lys	Ser	Pro	Thr	Val	Gln	Ser	Lys	Ala
				85					90					95	
Gln	Leu	Glu	Val	Arg	Pro	Val	Met	Val	Pro	Lys	Leu	Ala	Ser	Ile	Glu
			100					105					110		
Ala	Arg	Thr	Asp	Arg	Ser	Ser	Asp	Arg	Lys	Gly	Gly	Ser	Tyr	Lys	Gly
		115					120					125			
Arg	Glu	Ala	Leu	Asp	Gly	Arg	Gln	Val	Thr	Asp	Leu	Arg	Thr	Asn	Pro
	130					135					140				
Ser	Asp	Pro	Arg												
145															

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